Dell Force10
S50N and S50V Systems
Quick Start Guide

Regulatory Model: S50N/S50V

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Notes, Cautions, and Warnings

NOTE: A NOTE indicates important information that helps you make better use of your computer.

CAUTION: A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

If you purchased a Dell n Series computer, any references in this publication to Microsoft Windows operating systems are not applicable.

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About this Guide

This document is intended as a Quick Start Guide to get new systems up and running and ready for configuration. For complete installation and configuration information, refer to the following documents:

Documentation	S50N/S50V
Hardware installation and power-up instructions	*Installing S50N and S50V Systems*
Software configuration	*FTOS Configuration Guide*
Command line interface	*FTOS Command Line Reference Guide*
Latest updates	*Release Notes for the S-Series*

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Installing the Hardware

This guide assumes all site preparation has been performed before installing the chassis.

Installing the Chassis

To install the S50 chassis, Dell Force10 recommends that you complete the installation procedures in the order presented below.

NOTE: Unless stated otherwise, the installation instructions below apply to both the S50N and S50V chassis.

Always handle the system and its components with care. Avoid dropping the switch or its field replaceable units.

CAUTION: Always wear an ESD-preventive wrist or heel ground strap when handling the chassis and its components. As with all electrical devices of this type, take all necessary safety precautions to prevent injury when installing this system. Electrostatic discharge (ESD) damage can occur if components are mishandled.

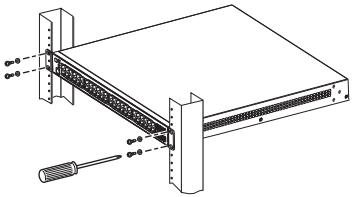
Installing the Chassis in a Two-Post Rack

The chassis is shipped with the universal front-mounting brackets (rack ears) attached. Ensure that there is adequate clearance surrounding the rack to permit access and airflow.

The S50N and S50V chassis can be installed using several methods. This document describes the most common installation method: two-post rack. For information regarding other installation methods, refer to the *Installing S50N and S50V Systems* guide.

This document does not include stacking or installing stacked units. Refer to the *Installing S50N and S50V Systems* guide for details on stacking installation and cabling.

Step	Task
1	Dell Force10 recommends that one person hold the chassis in place while a second person attaches the brackets to the posts.
2	Attach the bracket "ears" to the rack or cabinet posts, using two screws for each bracket. Ensure the screws are tightened firmly.



Attach a Ground Cable to the S50N and S50V Chassis

The S50V and S50N switches have both AC (3-prong plug receptacle) and DC (-48V terminal-type) connections on the back of the unit. They can use either power source independently or in combination, with the DC source in a backup mode (except for the 470W DC power supply). If you select AC and DC, the switch will only use the DC source after the AC source fails.

NOTE: The rack installation ears are not suitable for grounding.

CAUTION: Grounding conductors *must* be made of copper. Do not use aluminum conductors.

NOTE: Coat the one-hole lug with an anti-oxidant compound prior to crimping. Bring any un-plated mating surfaces to a shiny finish, and coat with an anti-oxidant prior to mating. Plated mating surfaces must be clean and free from contamination.

Attach a Ground Cable to the S50N-DC Chassis

The S50N-DC switches have two terminal blocks on the right side (instead of an AC receptacle) for two DC power supply inputs. The terminal block on the right, as you face the back of the chassis, is matched to the DC1 status LED on the front left of the switch and the left block is matched to the DC2 status LED.

You must provide your own cables to connect to the power source. Cables must be sized for 11.5 A service at no more than -48VDC input (per NEC in the United States; internationally, follow local safety codes.).

Connect the grounding cable to the FG terminal first, then connect the opposite end to the appropriate grounding point at your site to ensure an adequate chassis ground.

Install the SFP and XFP Optics

The S50N and S50V each have four receptacles at the right end of their faceplates that accommodate 10/100/1000 SFP optical transceivers.

A 10GbE module contains two ports. 10GbE modules should only be inserted or removed when the switch is powered down. Refer to the *Installing S50N and S50V Systems* guide for information related to optional module installation.

SFP and XFP transceivers can be inserted or removed while the switch is running.

CAUTION: Before connecting a transceiver to a source, check the receive power of the transceiver with an optical power meter. Generally, Dell Force10 specified optics are not to be subjected to receive power higher than that stipulated by the optic specification. If the optic is exposed to optical power in excess of the specification, there is a high likelihood that it will be damaged.

CAUTION: Electrostatic discharge (ESD) damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the chassis and its components.

WARNING: Follow all warning labels when working with optical fibers. Always wear eye protection when working with optical fibers. Never look directly into the end of a terminated or unterminated fiber or connector as it may cause eye damage.

Step	Task
1	Position the SFP or XFP so it is in the upright position. (The SFP optic has a key that prevents it from being inserted incorrectly.).
2	Insert the optic into the port until it gently snaps into place.

CAUTION: You can insert and connect XFP transceivers while the switch is operating. You can also disconnect and remove XFP transceivers while the switch is operating. However, inserting or removing the module is not supported; it can crash or lock up the switch, requiring a reboot.

CAUTION: The CX4 module does not use transceivers. However, you can use a CX4 cable with an XFP port by inserting a CX4 XFP converter (catalog name GP- XFP-1CX4) into the slot. An XFP port does not support the use of the cx4-cable-length command.

NOTE: For details on Dell Force10 supported optics, refer to http://www.force10networks.com/products/specifications.asp

Power Up Sequence

Supply Power and Power Up the System

There is no power switch. Connecting the switch to either an AC or DC power source starts the switch. The S50V and S50N switches have both AC (3-prong plug receptacle) and DC (-48V terminal-type) connections on the back of the unit. They can use either power source independently or in combination, with the DC source in a backup mode (except for the 470W DC power supply). You have three options for providing power to the switch — AC only, DC only, or using both AC and DC sources. If you select the third choice — AC and DC — the switch will only use the DC source after the AC source fails.

The rear of the S50N and S50V models have both an auto-sensing 110/220V AC receptacle and a standard -48V terminal-type DC connector. The rear of an S50N differs only in the arrangement of the lugs on its DC terminal block. Each system ships only with the AC power cord.

Dell Force10 recommends re-inspecting your system prior to powering up. Verify that:

- The equipment is properly secured to the rack and properly grounded.
- The equipment rack is properly mounted and grounded.
- The ambient temperature around the unit (which may be higher than the room temperature) is within the limits specified for the unit.
- There is sufficient airflow around the unit.
- The input circuits are correctly sized for the loads and that sufficient over-current protection devices are used.

- All protective covers are in place.
- Blank panels are installed if optional modules are not installed.

NOTE: A US AC power cable is included in the shipping container for powering up an AC power supply. All other power cables must be ordered separately.

CAUTION: Electrostatic discharge (ESD) damage can occur if components are mishandled. Always wear an ESD-preventive wrist or heel ground strap when handling the system and its components.

CAUTION: The power supply cord is used as the main disconnect device; ensure that the socket-outlet is located/installed near the equipment and is easily accessible.

AC Power

For the S50V and S50N, to use AC only, connect the supplied AC power cord first to the switch (receptacle on the right as you face the PSU side of the chassis) and then to the power source. Connect the plug to the AC receptacle, making sure that the power cord is secure. As soon as the cable is connected between the system and the power source, the chassis is powered-up; there is no on/off switch.

DC Power

To connect the chassis to the DC power source, follow the steps below:

Step	Task
1	Make sure that the remote power source (the circuit breaker panel) is in the OFF position.
2	Remove the safety cover from the DC terminal block.
3	Connect the -48 V and -48 V RTN (Return) cables to the switch terminals and then to the remote power sources, ideally on separate circuit breakers.
4	Replace the safety covers on the DC terminal blocks.
5	If you are connecting both terminal blocks, do not supply power until both terminal blocks are connected. You can supply power to either one or both. The S50N-DC does not set a precedence for either power source.

Power Supplies

On both the S50N and S50V, either the AC or DC power supplies alone are sufficient to power the switch. When both AC and DC power supplies are connected, they act in roughly a 60%/40% load-sharing mode.

WARNING: To prevent electrical shock, make sure the system is grounded properly. If you do not ground your equipment correctly, excessive emissions may result. Use a qualified electrician to ensure that the power cables meet your local electrical requirements.

Fans

Ventilation is side-to-side, with six fans on the left side of the switch as you face the PSU side.

The fan speed increases when the temperature reaches 72 degrees C, and decreases to normal speed when the temperature falls to 57 degrees C. The switch never intentionally stops managing traffic.

Status logging is identified by unit in the system log.

Fan replacement in the field is not offered as an option.

Specifications

Chassis Physical Design

Parameter	S50N and S50N-DC Specifications	S50V Specifications
Height	1.73 inches (4.4 cm)	1.73 inches (4.4 cm)
Width	17.32 inches (44.0 cm) (19" rack-mountable)	17.32 inches (44.0 cm) (19" rack-mountable)
Depth	16.73 inches (42.5 cm) (standard 1 rack unit)	16.73 inches (42.5 cm) (standard 1 rack unit)
Chassis weight with factory-installed components	14.41 pounds (approx.) (6.54 kg)	14.41 pounds (approx.) (6.54 kg)
Rack clearance required	Front: 5-inches (12.7 cm) Rear: 5-inches (12.7 cm)	Front: 5-inches (12.7 cm) Rear: 5-inches (12.7 cm)

Environmental Parameters

Parameter	S50N and S50N-DC Specifications	S50V Specifications
Temperature	Operating: 32° to 122°F (0° to 50°C) Non-operating (storage temperature): -40° to 158°F (-40° to 70°C)	Operating: 32° to 122°F (0° to 50°C) Non-operating (storage temperature): -40° to 158°F (-40° to 70°C)
Maximum thermal output	S50N: 531 BTU/Hour S50N-DC: 465 BTU/Hour	S50V: 497 BTU/Hour
Maximum altitude	No performance degradation to 10,000 feet (3,048 meters)	No performance degradation to 10,000 feet (3,048 meters)
Relative humidity	10 to 85% non-condensing	10 to 85% non-condensing
Shock	Designed to meet MIL-STD-810	Designed to meet MIL-STD-810
Vibration	Telcordia GR-63-CORE	Telcordia GR-63-CORE
ISO 7779 A-weighted sound pressure level	S50N: 42.0 dBA at 73.4°F (23°C)	S50V: 62.2 dBA at 73.4°F (23°C)

AC Power Requirements

Parameter	S50N and S50N-DC Specifications	S50V Specifications
Nominal input voltage	100 to 240 VAC, 50/60Hz	100 to 240 VAC, 50/60Hz
Maximum current draw	6.5 A @ 115 VAC 3.25 A @ 200/240 VAC	6.5 A @ 115 VAC 3.25 A @ 200/240 VAC
Maximum power consumption	S50N: 156W S50N-DC: 136 W	S50V: 146W
Maximum PoE power	320W for PoE using either AC or DC inputs 790W for PoE using load-sharing AC and DC inputs	320W for PoE using either AC or DC inputs 790W for PoE using load-sharing AC and DC inputs

DC Power Requirements

Parameter	S50N and S50N-DC Specifications	S50V Specifications
Nominal input voltage	-48V to -54V	-48V to -54V
Maximum current draw	S50N-DC: 3.6 A at -48 VDC	S50V: 11.5 A @ -48VDC
Maximum power consumption	S50N: 102W S50N-DC: 136W	S50V: 470W (790W using current-sharing AC and DC inputs)

Installing Power Supplies

The S50N and the S50V are shipped with power supplies installed and are not hot-swappable.

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Installing the Software

Navigating CLI Modes

The FTOS prompt changes to indicate the CLI mode. You must move linearly through the command modes, with the exception of the **end** command which takes you directly to EXEC Privilege mode; the **exit** command moves you up one command mode level.

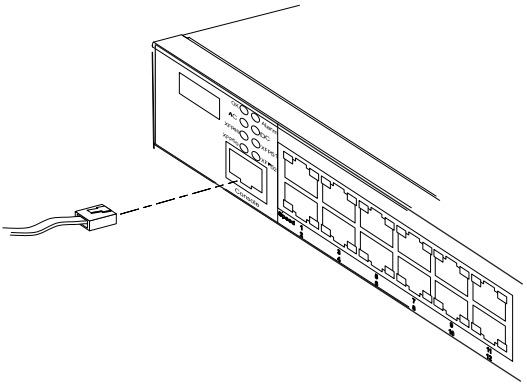
Console Access

Access the command line through a serial console port or a Telnet session. When the system successfully boots, you enter the command line in the EXEC mode.

NOTE: You must have a password configured on a virtual terminal line before you can Telnet into the system. Therefore, you must use a console connection when connecting to the system for the first time.

Serial Console

The RS-232 console port is labeled on the chassis. It is in the upper right-hand side, as you face I/O side of the chassis.



Step	Task
1	Install the RJ-45 copper cable that is shipped with the S50V system into the console port. **CAUTION: You must install a straight-through RJ-45 copper cable (a standard Ethernet cable) into the console port. This is different from many other implementations that require an Ethernet crossover cable (or rollover cable). If connecting to a terminal server and using a crossover cable, daisychain another crossover cable to effectively get a straight-through cable connection. Many console terminal servers use octopus cables that are crossover cables. To accommodate the octopus cable, connect an additional crossover cable, as above, to effectively install a straight-through cable.**
2	If necessary, connect the RJ-45/DB-9 adapter that is shipped with the S50V system to the end of the RJ-45 cable that will connect to your terminal.
3	Set your initial console terminal settings to match the default console settings on the switch. 9600 baud rate No parity 8 data bits 1 stop bit No flow control (console port only) After establishing a connection, you can modify the settings to match at each end of the connection.

Accessing the Console Port

Connect the RJ-45/DB-9 adapter that is shipped with the S50V system to the RJ-45 cable.

Table 2-1. Pin Assignments for Console Port

Signal	RJ-45 Pinout
NC	1
NC	2
RXD	3

Table 2-1. Pin Assignments for Console Port

Signal	RJ-45 Pinout
GND	4
GND	5
TXD	6
NC	7
NC	8

Default Configuration

A version of FTOS is pre-loaded onto the chassis, however the system is not configured when you power up for the first time (except for the default hostname, which is `Force10`). You must configure the system using the CLI.

Configure Layer 2 (Data Link) Mode

Use the **switchport** command in INTERFACE mode to enable Layer 2 data transmissions through an individual interface. The user cannot configure switching or Layer 2 protocols such as the spanning tree protocol on an interface unless the interface has been set to Layer 2 mode.

Step	Task	Command Syntax	Command Mode
1	Enable the interface.	**no shutdown**	INTERFACE
2	Place the interface in Layer 2 (switching) mode.	**switchport**	INTERFACE

To view the interfaces in Layer 2 mode, use the **show interfaces switchport** command in the EXEC mode.

Configure a Host Name

The host name appears in the prompt. The default host name is `Force10`.

- Host names must start with a letter and end with a letter or digit.

- Characters within the string can be letters, digits, and hyphens.

Task	Command Syntax	Command Mode
Create a new host name.	**hostname** *name*	CONFIGURATION

Access the System Remotely

You can configure the system to be accessed remotely by Telnet.

The S50N and S50V chassis do not have a dedicated management port. Configure any port on the chassis to be the port through which you manage the system and configure an IP route to that gateway.

Step	Task	Command Syntax	Command Mode
1	Configure an IP address for the port through which you will manage the system.	**ip address**	INTERFACE
2	Configure an IP route with a default gateway.	**ip route**	CONFIGURATION
3	Configure a username and password.	**username**	CONFIGURATION

Configure a Username and Password

In FTOS, you can assign a specific username to limit user access to the system.

Task	Command Syntax	Command Mode
Assign a user name and password. Configure the optional and required parameters.	**username** *name* [**access-class** *access-list-name*] [**nopassword** | **password** [*encryption-type*] *password*] [**privilege** *level*]	CONFIGURATION

To view usernames, use the **show users** command in the EXEC Privilege mode.

Configure the Enable Password

The EXEC Privilege mode is accessed by the **enable** command. Configure a password as a basic security measure. When using a console connection, EXEC Privilege mode is unrestricted by default; it cannot be reached by a VTY connection if no password is configured. There are two types of enable passwords:

- enable password stores the password in the running/startup configuration using a DES encryption method.
- enable secret is stored in the running/startup configuration in using a stronger, MD5 encryption method.

Dell Force10 recommends using the enable secret password.

Task	Command Syntax	Command Mode
Create a password to access EXEC Privilege mode.	**enable [password | secret] [level** *level*] [*encryption-type*] *password*	CONFIGURATION

Create a VLAN

The Default VLAN is part of the system startup configuration, and is by default, VLAN 1. You may make another VLAN the Default VLAN. The Default VLAN cannot be deleted, disabled, or configured (you cannot assign it an IP address), and only untagged interfaces can belong to it.

When an interface is configured, a switchport automatically places it in the default VLAN as an untagged interface. All switchports must belong to at least one VLAN, so to remove a switchport from the Default VLAN, you must place it as tagged or untagged in some other VLAN, or remove the switchport configuration.

Task	Command Syntax	Command Mode
Create a VLAN	**interface vlan** *vlan-id*	CONFIGURATION
Display all VLANs.	**show vlan** *vlan-id*	EXEC Privilege

Assign Interfaces to a VLAN

A port may either be an untagged member of a single VLAN, or a tagged member of perhaps multiple VLANs.

- Untagged Ports — ports that do not append an 802.1Q VLAN tag to frames on egress, and do not accept tagged frames on ingress (tagged frames are dropped). Untagged ports must be connected to VLAN-unaware devices.
- Tagged Ports — ports that append an 802.1Q tag to frames on egress, and accept only tagged frames on ingress (untagged frames are dropped). Tagged ports must be connected to VLAN-aware devices.

When you configure an enabled port as a switchport, the port is placed in the default VLAN. To remove a switchport from the default VLAN, remove the switchport configuration. To move the port to another VLAN, add it to the desired VLAN as either a tagged or untagged member.

To view just the interfaces that are in Layer 2 mode, enter the **show interfaces switchport** command in the EXEC mode.

Step	Task	Command Syntax	Command Mode
1	Assign a switchport to a VLAN.	[**tagged** | **untagged**] *interface*	INTERFACE VLAN
2	Display all switchports and the VLANs of which they are members.	**show vlan**	EXEC Privilege

Assign an IP address to a VLAN

NOTE: An IP address cannot be assigned to the Default VLAN, which, by default, is VLAN 1. To assign another VLAN ID to the Default VLAN, use the default **vlan-id** *vlan-id* command.

Task	Command Syntax	Command Mode
Configure an IP address and mask on the interface.	**ip address** *ip-address mask* [*secondary*]	INTERFACE

Connecting the Chassis to the Network

Once you have completed the hardware installation and software configuration, you can connect to your company network by following your company's cabling requirements.

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